Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-17 (canceled)

18. (original) A method of fabricating a vertical-cavity, surface-emission-type laser diode, said vertical-cavity, surface-emission-type laser diode comprising: a semiconductor substrate; and an optical cavity structure provided on or above said semiconductor substrate, said optical-cavity structure comprising an active region containing at least one active layer that produces a laser beam, and upper and lower reflectors sandwiching said active region to form said optical cavity, said lower reflector including a semiconductor distributed Bragg reflector having a refractive index that changes periodically, said lower reflector reflecting an optical beam incident thereto by diffraction, said semiconductor distributed Bragg reflector comprising a low-refractive-index layer of $Al_xGa_{1-x}As$ ($0<x\leqq 1$) and a high-refractive-index layer of $Al_yGa_{1-y}As$ ($0\leqq y<x\leqq 1$), a non-optical recombination elimination layer being provided between said active layer and said lower reflector, said method comprising the steps of:

forming said lower reflector by depositing one or more layers containing Al;

forming said non-optical recombination elimination layer, and

forming said active layer containing nitrogen on said lower reflector,

wherein there is provided a step of removing a residual material containing Al such as an Al source or Al reactant or Al compound or Al, from a site in which the residual material makes a contact with a nitrogen source material or an impurity contained in the nitrogen source material, after growth of said layer containing Al but before the end of growth of the non-optical recombination layer.

19. (original) A method as claimed in claim 18, wherein said step of removing said residual material is conducted by purging said site by a carrier gas.

20. (original) A method as claimed in claim 18, wherein said layer containing Al is deposited by an MOCVD process that uses a metal-organic Al source material, and wherein said active layer containing nitrogen is formed by an MOCVD process that uses a nitrogen source compound.